JUNE 1982

DRIVER

"when you call me that, SMILE"

KIDS!
CARS!
CONFUSION!
School's OUT

SEE BACK COVER

DRIVER

THE
TRAFFIC SAFETY MAGAZINE
FOR THE MILITARY DRIVER

DEPARTMENT OF THE AIR FORCE
HQ AIR FORCE INSPECTION AND SAFETY CENTER
Norton Air Force Base, California 92409

Hon VERNE ORR
Secretary of the Air Force

Lt Gen HOWARD W. LEAF
The Inspector General, USAF

Maj Gen HARRY FALLS, Jr.
Commander
Air Force Inspection and Safety Center

Brig Gen LELAND K. LUKENS
Director
Aerospace Safety, USAF

PUBLISHED MONTHLY IN COOPERATION
WITH
THE DEPARTMENT OF THE ARMY
AND
THE DEPARTMENT OF THE NAVY

Dr. FRANCIS S. McGLADE
Director of Safety
United States Army

RADM T.C. STEELE, Jr.
Commander
Naval Safety Center

AFRP 127-1

Entered as a publication at the Second-Class rate (USPS No. 586-430) at San Bernardino Postal Service, 1331 South E Street, San Bernardino, CA 92403.

Authority to publish this periodical automatically expires on 30 OCTOBER 1983 unless its continuance is authorized by the approving authority prior to that date.

SUBSCRIPTION — DRIVER is published monthly and is available on subscription for $14.00 per year domestic; $17.50 per year for foreign mailing through the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. Back issues are not available. Changes in subscription mailings should be sent to the above address. Use of funds for printing this publication has been approved by Headquarters, United States Air Force, Department of Defense, Washington, D.C. No payment can be made for manuscripts submitted for publication. Contributions are welcome, as are comments and criticism. Address all correspondence to the Editor, DRIVER® Magazine, HQ AFISC/SEDD, Norton AFB, CA 92409.

Distribution: One copy for every 9 members of USAF.

ATTENTION DEPT OF THE NAVY PERSONNEL: Address all queries concerning distribution to NAVSAFECEN, NAS NORFOLK, VA 23511, Attn: Safety Publications Dept. All other correspondence will be welcomed by the Editor.

The purpose of this magazine is the prevention of vehicle accidents, and the contents are not directive unless so stated. Address reprint requests, stating intended use of material, to the Editor. The Editor reserves the right to make any editorial changes in manuscripts which will improve the material without altering the intended meaning.

The inclusion of names of any specific commercial product, commodity, or service in this publication is for information purposes only and does not imply endorsement by the Air Force.

Certain individuals shown in this magazine are not members of the Air Force and therefore do not conform to Air Force grooming standards.

JUN

VOLUME 16 NUMBER 1

CONTENTS

Features

"When You Call Me That, Smile" **1**

SAE **8**

Larger Is Safer **12**

Cinder Elliot **14**

PCS! England!?!? **16**

Make Both Ends Meet **20**

School's Out **Back Cover**

Departments

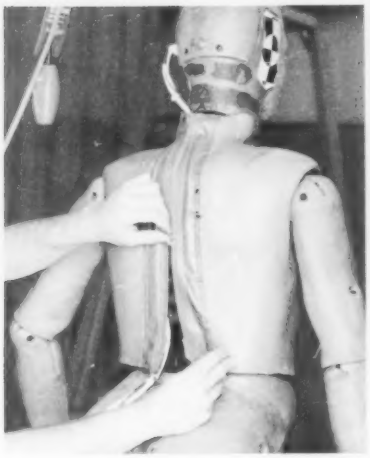
Timely Topics **19**

The Backyard Mechanic **24**

Backfire **28**

COL. WARREN L. BUSCH **Chief, Safety Education Division**	**VIRGINIA HENDRIX** **Editor**

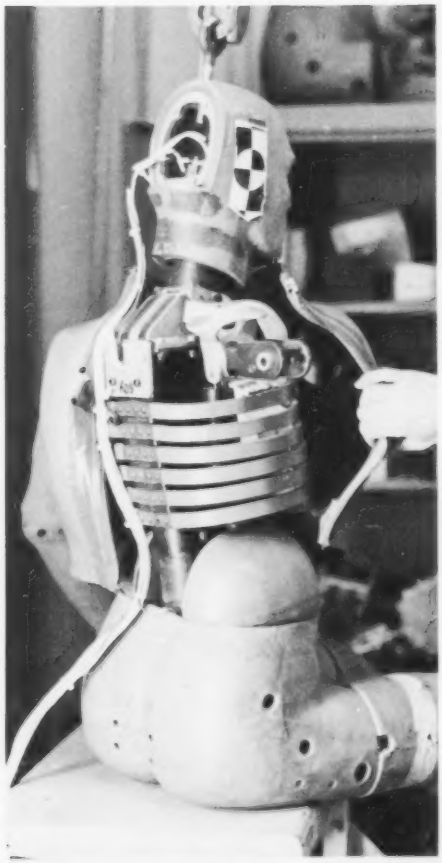
TSgt RON LATHROP **Technical Editor**	**JERI ROOD** **Feature Editor**	**DON KELLEHER** **Art Director**	**LORRAINE HAMBLEN** **Staff Artist**
	CLIFF MUNKACSY **Staff Photographer**		

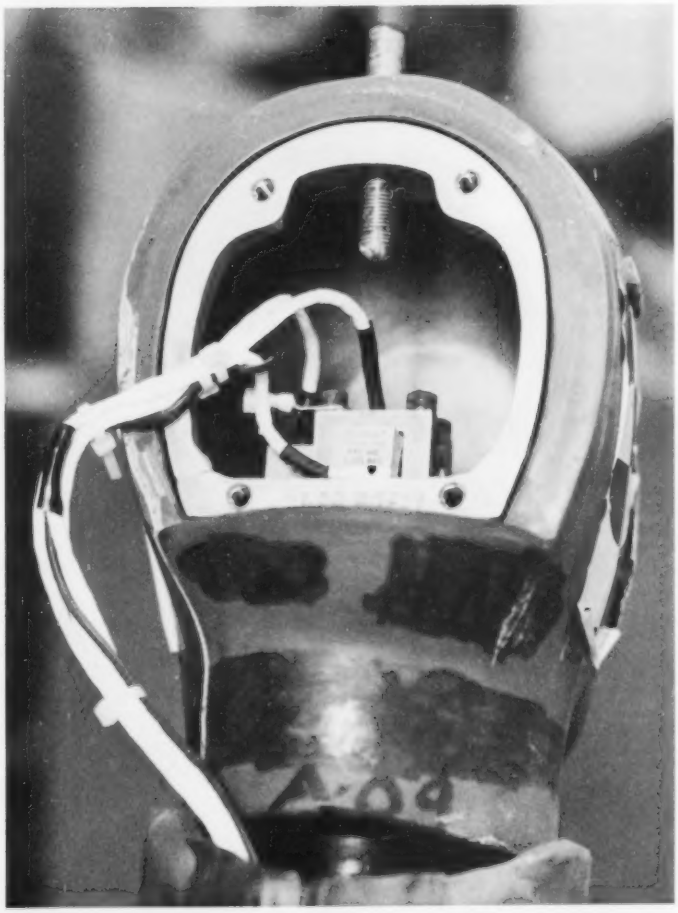


(far left)
Now you get to see what I'm really like. The wires lead into my body where they put those accelerometer things I told you about.

(near left)
He's removing the back of my head so he can get the accelerometer out. Again, it's not painful — I never say a word.

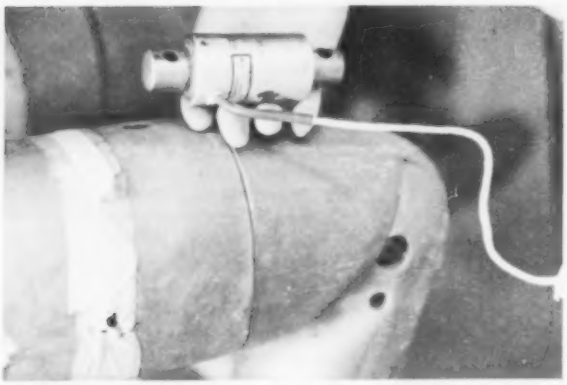
(below)
This is the accelerometer, and you can also see my steel "skull." If humans had insides like that, they might be able to withstand more in a collision, but they don't and they can't.



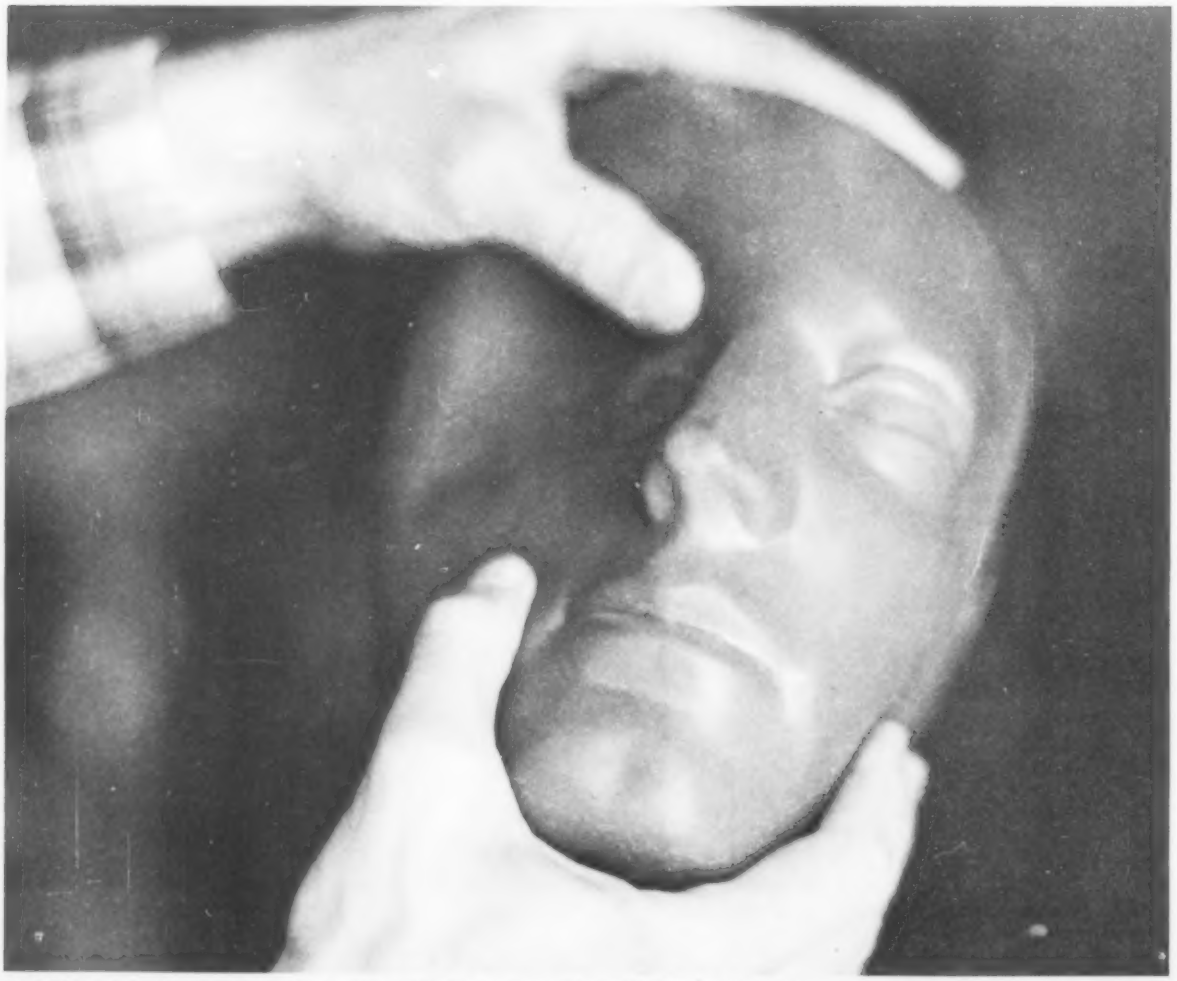


Here, he's taken off my right arm and you can see more of my metal "skeleton." It's very durable.

continued



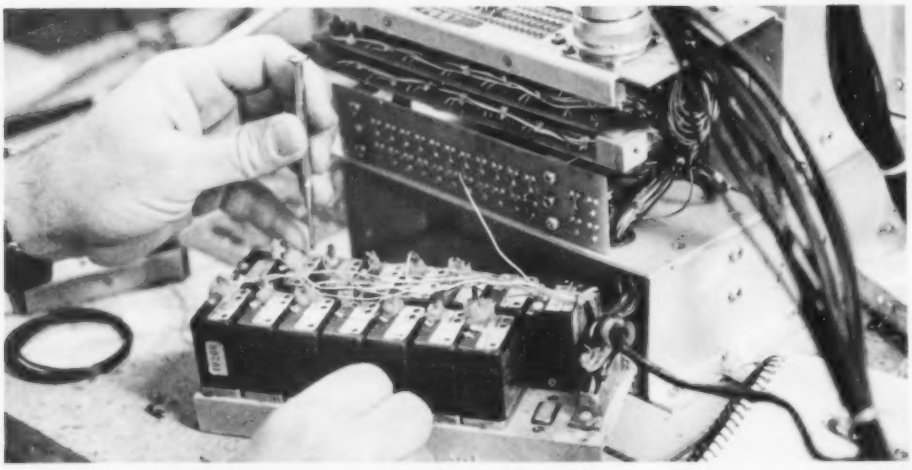
(left) This is the "femur load cell," which measures the force to my knees when they hit the dashboard. **(right) As you can see,** our hands are flexible, not like those of our relatives the department store dummies. We're stronger and we bend, but they dress nicer.



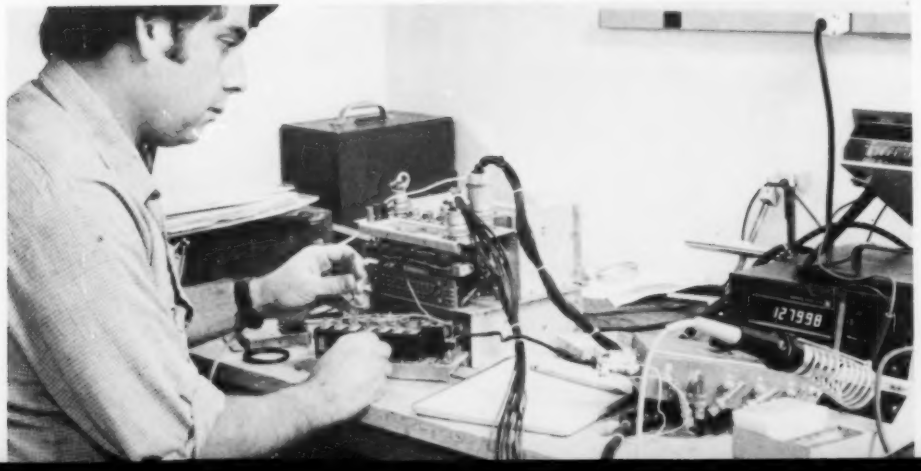
And this is the head of one of my friends. It's also flexible, so it can "bounce back" after the crash.

Our little brother is this guy, who is about the size of a six-year-old.

(right)
My 225-pound friend guards the spare parts. We keep a lot of spares around in case of damage.



This is the inside of a Remote Signal Conditioning Module or RSCM. This is the sending unit that relays the information from the accelerometers to the DSI data center. Despite its looks, it is crashworthy.



The RSCM must be carefully calibrated to insure the technicians get accurate data from the instruments in my body.

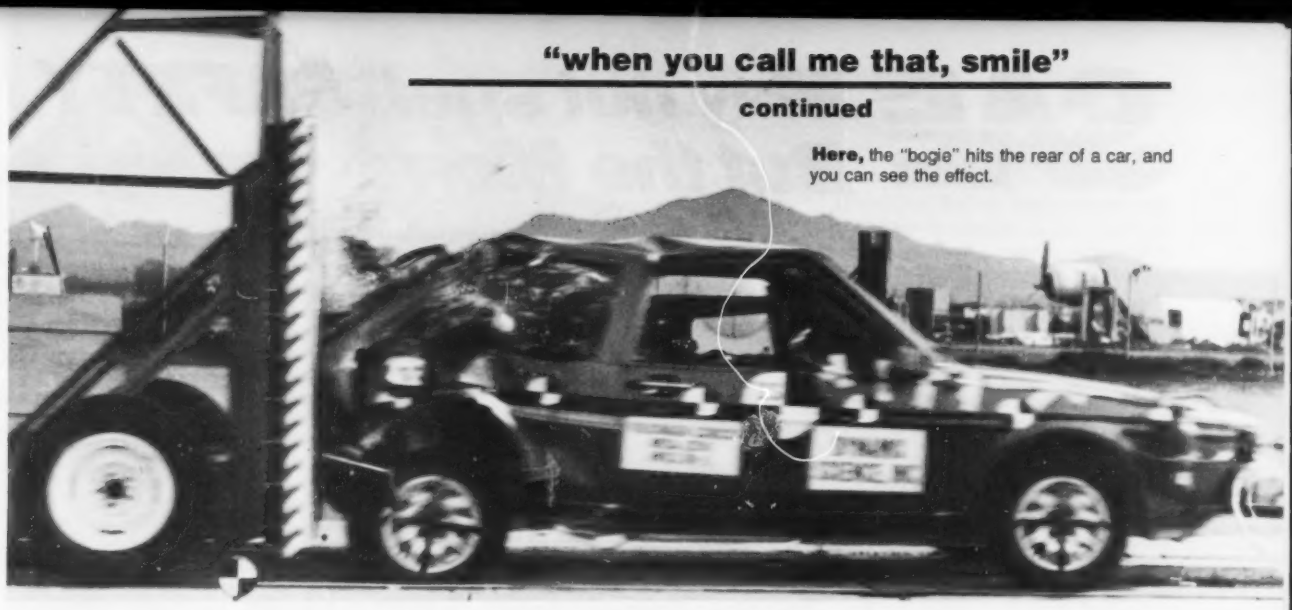
continued

(left) This is the test area for the frontal impact collisions. The white rectangle with the cross is the target. It contains a device to measure the force of the crash. The tower is for a camera and there is a pit below the impact area for another camera. The cars are pulled along a 1200 foot monorail by a cable. **(right) Here's what** a couple of cars looked like after DSI got through with them.

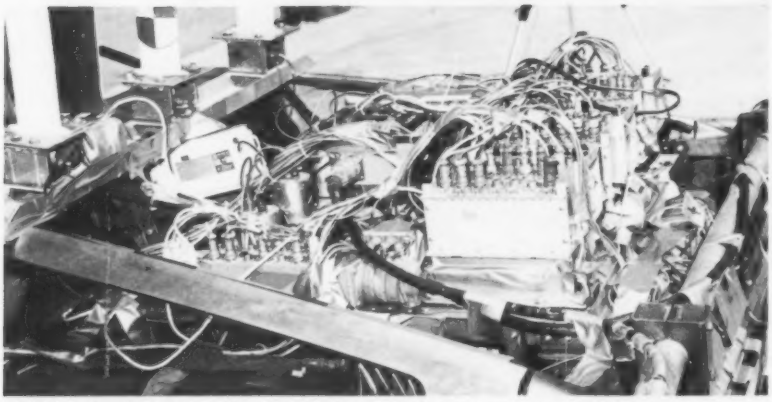
This car was originally used in the "Smokey and the Bandit" movie. A couple of years later, DSI crashed it to test out the airbag in the car. It worked, by the way.

DSI tests school buses, too.

(below)
This one, for instance is set up to be hit by a moving barrier, or "bogie." That's it with the wheels on the left.



Here, the "bogie" hits the rear of a car, and you can see the effect.

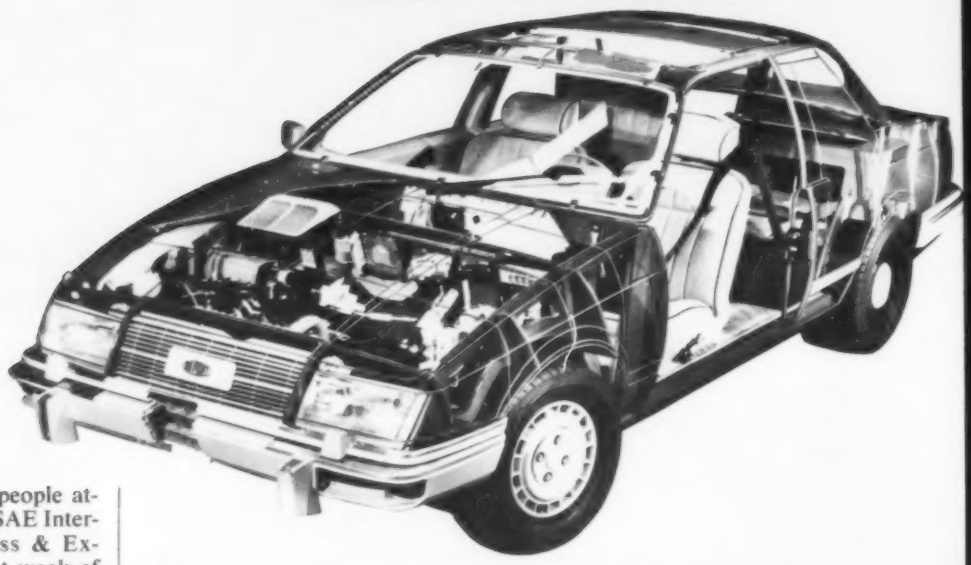


This is a typical set-up of the RSCMs in the back of a car. Pretty complicated, huh?

This test is to place pull stress on the seat-belts.

One of my friends has just hit a fixed barrier at an angle, and an airbag has stopped him from eating the windshield. An interesting thing about airbags — if you don't have a seatbelt on, you "submarine" or slip under them and crunch your kneecaps on the dash.

SAE May not spell SAFETY But the Membership Knows How



Hybrid II was the centerpiece of Du Pont's exhibit at the 1982 SAE Exposition. The car features more than 200 commercial applications of 50 Du Pont products representing a wide variety of technologies.

More than 28,200 people attended the 1982 SAE International Congress & Exposition in Detroit the last week of February. This larger-than-expected attendance is a tribute to the technical program and the quality of the exhibits. It is particularly impressive in view of the poor economic conditions in the automotive industry.

More than 635 papers, oral presentations and panel discussions were delivered in this year's technical program, making this the most comprehensive technical program ever. The Exposition included over 74,000 square feet of educational displays. In all, 255 organizations from 12 countries participated.

The applause given remarks made by Drew Lewis, Secretary of Transportation, during the SAE Annual Banquet indicated the engineering community's continued concern for safety. That concern is stronger for actual safety than it is for cost-effective safety.

SAE members support the theory that the motor vehicle alone cannot be blamed for all the fatalities and injuries on our highways. As Secretary Lewis put it, "We must do more to develop safer drivers as well as safer cars."

SAE members were proud of the recognition of the American auto industry's commitment to safety — the 19 cars with the best safety records were all US-made. As the Secretary said, "A good reason to buy American cars."

However, the SAE's support of safety programs goes much deeper than applause. The SAE is lending its support to a massive new, grass roots educational campaign on seat belts. The National Highway Traffic Safety Administration (NHTSA) will be assisting, stimulating and motivating groups to participate in the campaign. The thrust of SAE's efforts will be in convincing people of the structural integrity of seat belts and the fact that they are effective — if they are fastened. The goal is for people to buckle up voluntarily rather than be regulated by law to do so.

NHTSA Administrator Ray Peck says that vehicle occupants can be educated to save themselves. In fact, 60 percent of all injuries last year could have been avoided had people been wearing their seat belts, and 13,000 people would still be alive today had they buckled up.

Technical presentations: Pedestrian accidents received a lot of attention in the technical sessions. Computers are being used to simulate vehicles hitting pedestrians, and results are accurate enough, at least in simple impacts, to help in better design. However, vehicle speed still has the most effect on pedestrian injury. Body size greatly influences the pedestrian's response and the subsequent location and severity of the injury. In general, children are more likely to suffer severe injury than adults in the same situation. Most notably, crash forces are more severe to a child's head, chest and hip area than to the adult's. Sloping the bumper-grill doesn't reduce the head injury but does reduce lower body injury for adults and children.

New concepts for cars and trailers: While tricycles and some other three-wheeled vehicles have had a bad reputation for stability, a properly-engineered three-wheeled car can be made as stable as its four-wheeled counterpart, according to

Developed as a test bed for some two dozen General Electric automotive materials and ideas, the GE Mustang was featured in their Materials Center display at the SAE show.

Paul G. Van Valkenburgh and Richard H. Klein of Systems Technology, Inc., and Joseph Kanianthra of NHTSA. In addition, the three-wheeler offers considerable efficiency and practicality advantages.

It appears possible to build a three-wheeled car with essentially the same handling and overturn characteristics as any given four-wheeled car. All the laws of physics and vehicle dynamics engineering apply to both, with a few special considerations. While it is possible for a poorly-designed three-wheeler to have poor handling characteristics, the same can also be said for a poorly-designed car which happens to have four wheels.

Not all the safety programs are directed at cars and trucks; trailers also are getting a share of the attention.

A significant problem in trailering safety is increased stopping distance due to increased total vehicle mass without a proportional increase in braking effectiveness. Analytical equations have now been developed which can be used to predict stopping distance of these combinations as well as those trailers having no brakes.

Additionally, new analytical results now fill an enormous gap between existing classical vehicle stability results and large-scale simulation results for the lateral stability of car/trailer systems. Wind tunnel studies and computer simulations are being used to determine the effects of aerodynamics on the lateral-directional stability and crosswind response of passenger car/utility trailer combinations.

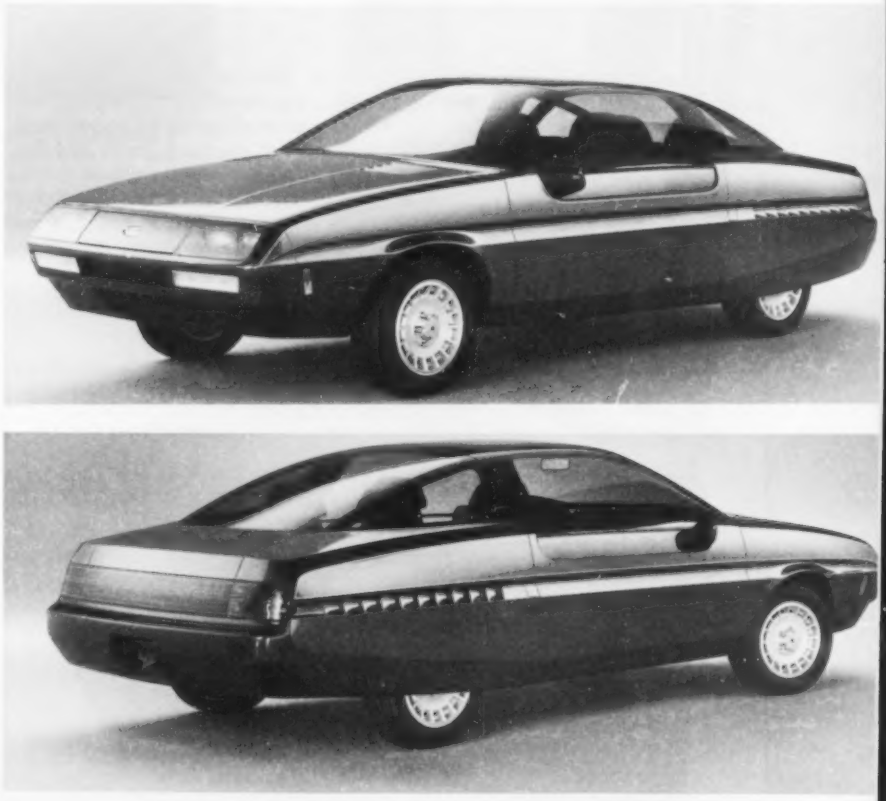
Inside the car: The energy-absorbing steering system is recognized as an important and effective safety feature. Yet the steering wheel remains a frequent source of occupant injury. Each accident is virtually unique, and the type of driver interaction with the steering system is quite varied.

Therefore, before there can be any further improvements in the steering system, engineers must understand the wide range of accident configurations and driver interactions which may involve the steering assembly. Because of the complexity of occupant interactions with the steering assembly, active research in many areas of crash performance and safety benefits of energy-absorbing steering systems continues.

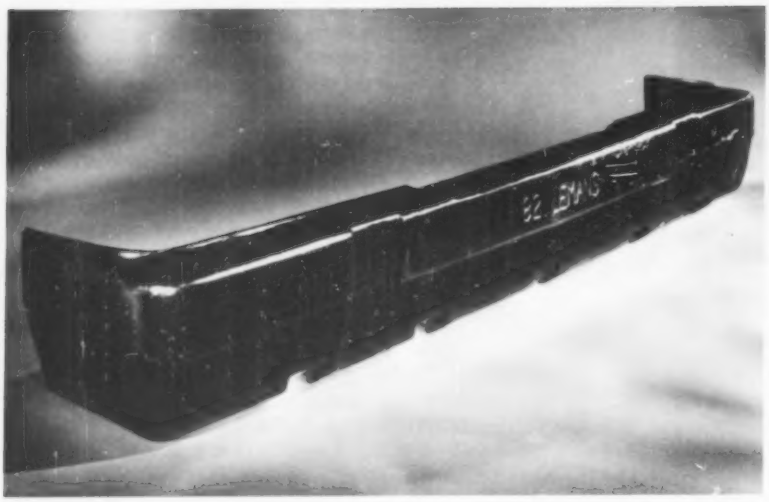
Current energy-absorbing steering assemblies prevent 1,300 fatalities and 23,000 nonfatal injuries requiring hospitalization annually. The lifetime cost of owning and operating cars so equipped is $10.

Since there is a continuing controversy regarding the design, implementation and efficiency of airbag restraints, it appears that the most

continued



There's no mistaking the aerodynamic flair designed into the Topaz Mustang — a new Ford Motor Company concept car that made its first public appearance at the annual SAE Exposition.



Urethane reaction injection molded (RIM) parts, such as automotive fascia, are sensitive to the shape of the form used for support during painting operations. Davidson Rubber Division of Excello Corp. has enhanced the contour and surface of its parts by using supports molded from STX, a nylon 6 and fiberglass structural composite supplied by Allied Fibers & Plastics Company.

effective and currently practical protective system is a combined leg/lap and chest restraint system. This system consists of restraining belts and modified dash-cowl-firewall design.

Restraining belt forces can contribute to abdominal injuries during crashes. These forces and, hence, abdominal injuries themselves can be reduced by leg restraint that can be achieved by minor modifications of the dash, cowl and firewall designs.

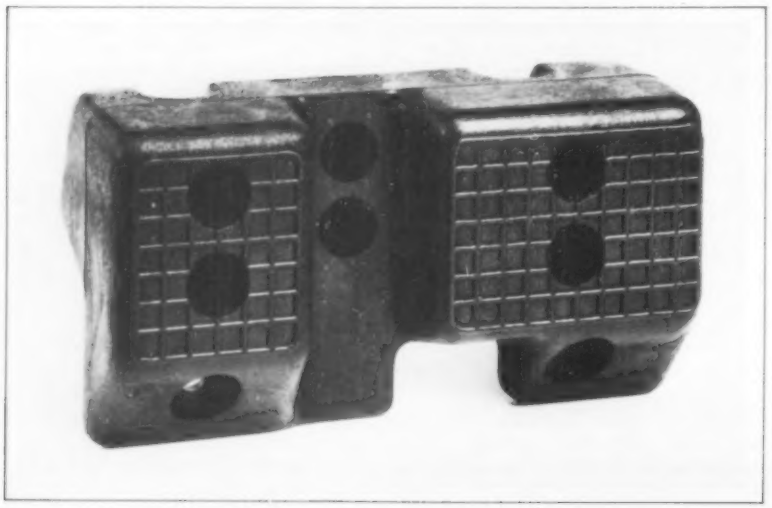
The trend toward smaller, lighter and more efficient cars has also created special problems for the seating engineer. Today's cars require innovations in interior styling that are forgiving relative to the physical confines of smaller passenger compartments. Packaging the interior, specifically seats, in these smaller cars has provided a challenge to seating engineers unlike ever before.

Outside the car: SAE members don't limit themselves to just vehicle design; they get involved in all kinds of areas outside the machine. At this year's meeting they were told that nighttime visibility of road markings can be improved considerably by the application of continuous stripes with a vertical profile or by raised pavement markings.

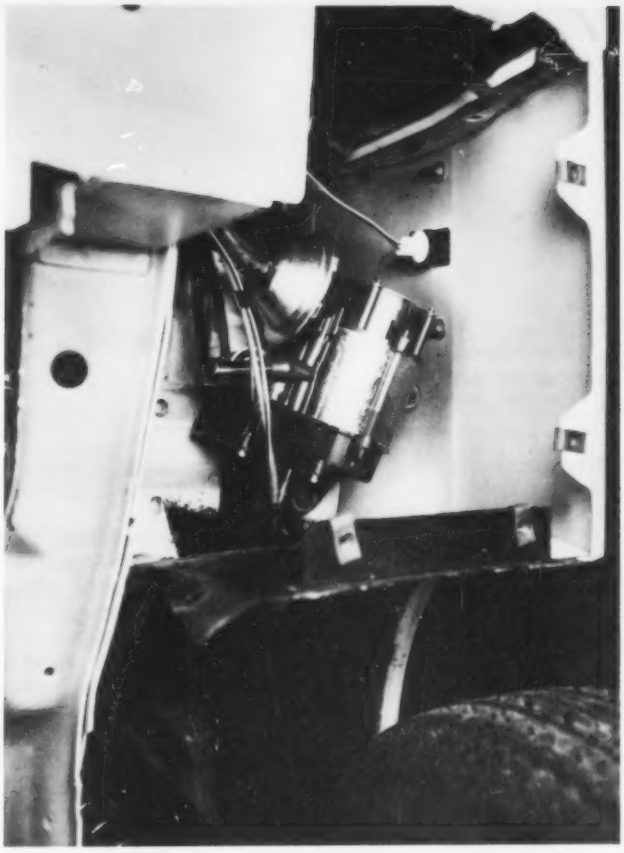
Your next car may hit its first pothole even before it's off the engineer's drawing board. If so, it may be because computer simulations of such road abuse are helping to design suspensions able to take the beating.

The traditional approach to gaining extreme conditions information is through the actual building and testing of vehicle prototypes. Computer simulation offers the advantages of short set-up time, repeatable test conditions, and better quantitative information about the suspension and its reactions to abuse.

And if the real car's tire were to get damaged in hitting a real pothole, engineers also focused on a new low-



Ford Motor Company designers have found a new energy-absorbing application for Du Pont's "Surlyn" ionomer resin: a bumper stop in 1982 Lincoln Continentals equipped with V-6 engines. Because the V-6 block is shorter than either the straight six or V-8, the bumper stop is added to improve crash energy management through the vehicle power train for better overall crash performance.



Need a quick source of vacuum to provide power for your brakes but the engine is already tapped out running the emission control devices, automatic cruise controls and climate control systems? How about an electrical vacuum pump that operates only on demand? This is a back-up system housed in Du Pont "Rynite" 530 PET thermoplastic polyester resin located beneath the battery.

tire-pressure warning device. Although durability of this device is still under study it does show numerous merits including a fail-safe system.

Recent advances in microcomputer technology and speech processing have made it possible for man and machine to carry on a verbal conversation. Furthermore, these developments may soon enable flight crew members to communicate, in words, with aircraft computer and information systems.

With the increases in air traffic density, along with reductions in crew complement and the interface requirements of more computer processing and data storage on aircraft of the future, the physical and visual abilities of the flight crew will be severely challenged. However, with the new technology, cockpit workloads could be maintained at manageable levels.

Overall: While SAE may not spell "safety," the know-how of its membership is working on every front to make transportation safer for all of us.

One of the ways to bring down weight and improve fuel consumption is seating suspension systems such as this Pirelli Sisiara. Such systems offer ventilation and can be "tuned" to individual vehicles.

The full-size, six-passenger car is not only safer than smaller cars but can be economical when diesel-powered.

Recreational vehicles can even put diesel engines to remarkable use when combined with superchargers.

LARGER is SAFER

For many people the fact that larger cars are safer than smaller models is relative. They must have the larger cars because of the size of their families. Six-passenger comfort is a requirement. To get this comfort and fuel economy too, they're turning to diesel-powered automobiles.

Today, six percent of the cars sold in the U.S. are diesel-powered. By 1985, this number will approach 15 percent. About 20 percent of *all* cars and light trucks sold by 1990 will be diesels. So, the era of the six-passenger diesel automobile may be just beginning. And the popularity of recreational vehicles could quickly return if equipped with fuel-efficient diesel power plants.

However, diesels present engineers and owners with special problems. For example: Is there a practical solution to replacing or extending current diesel fuel supplies? Are there ways to reduce diesel combustion noise and provide a balance among diesel emissions? Do cold temperatures mean reduced fuel mileage and increased emissions? And what about cold weather starting problems and water in the fuel?

The idea of using vegetable oils in diesel engines is not new. As early as the 1920s, engineers considered using oil derived from plants as fuel for diesels. Recently, Rodica A. Baranescu and Joseph J. Lusco of the International Harvester Company tested three different blends of sunflower oil and diesel fuel. Problems encountered included: deposit buildup after just a few hours of operation, the formation of gum in the injection system when the engine was shut down for longer periods, and cold-temperature problems caused by the greater viscosity of the sunflower oil.

Their findings were comparable to the negative results also reported by M. Ziejewski and K.R. Kaufman of North Dakota State University. However, as Baranescu and Lusco pointed out in their presentation to the Society of Automotive Engineers, "We are only in the process of accumulating data about how oils behave as fuels or fuel extenders. As we encounter troubles and emphasize limitations, we realize that more research will be needed to understand how and where to best use the potential of vegetable oils."

Optimizing the design of diesel engine prechambers and injection timing are some of the ways to reduce noise and balance emissions.

The prechamber, connected to the diesel's main combustion chamber, facilitates air-fuel mixing for more complete combustion. "Engine performance and exhaust emissions are strongly influenced by the air-fuel interactions that occur in the prechamber," according to Dr. Keith Meintjes, a General Motors Research Laboratories engineer. Dr. Meintjes has developed a two-dimensional computer model that calculates the flow fields generated during compression in various diesel prechambers.

To validate the program another General Motors Research Laboratories engineer, Dr. Alex Alkidas applied high-speed schlieren photography to a two-dimensional simulation of a prechamber.

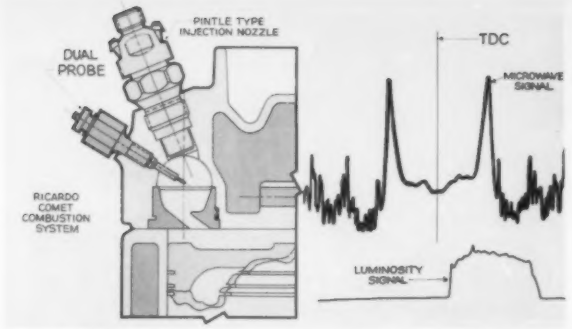
Diesel injection timing is very critical to exhaust emissions. While earlier injection of the fuel tends to reduce hydrocarbons and increase nitrogen oxides, later injection has the opposite effect. Thus, as emissions standards are tightened, there is a narrowing of the range of acceptable timing in which the fuel injection equipment can operate.

Previous methods for setting the injection pump timing involved a stationary alignment between the pump and engine, resulting in timing errors which could be as great as two or three degrees in terms of engine crankshaft rotation. With the help of a new microwave adjustment system, it's now possible to set the injection timing of production diesel engines to 0.1 degree of crankshaft rotation. Mark K. Krage, John H. Lienesch and David M. Violetta, General Motors Corporation, claim that the new timing method will allow diesel engines to meet legislated emission standards with minimal need for exhaust gas recirculation, which tends to increase smoke, particulate emissions and oil contamination.

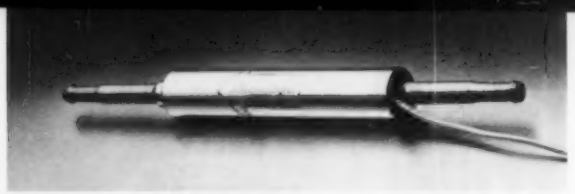
Meanwhile, James N. Braddock, of the U.S. Environmental Protection Agency, reported cold-temperature testing of two diesel-powered cars reduced fuel mileage by between 10 to 17 percent, but didn't increase emissions of currently regulated pollutants. While the lower temperature didn't increase emissions of hydrocarbons, carbon monoxide or nitrogen oxides, the amount of particulates did increase significantly.

Diesel particulate emissions are 30 to 50 times greater than those produced by catalyst-equipped gasoline engines. Therefore, there has been concern expressed that diesels will increase the already high levels of particulates in the colder metropolitan regions.

However, a more immediate problem facing diesel owners is whether or not their engines will start and continue to run satisfactorily in cold



The picture at the left shows a cross-section of one cylinder of a diesel engine with a probe incorporating both a microwave antenna and light sensor inserted into the combustion chamber, replacing the glow plug. After timing, the glow plug is reinstalled. The signals at the right represent the microwave response (top) and light generated from the combustion event (bottom). Symmetry analysis of the microwave trace locates top-dead-center of the piston as the engine is running. Then the light signal is used to adjust the fuel injection pump to specifications.



Installing an electric fuel heater as an in-line component of the fuel feed system aids diesel fuel flow during cold weather operation.

Low-cost water separators protect diesel engine fuel injection pumps, auxiliary transfer pumps, injector nozzles and fuel filters from water contamination, rusting and clogging, while increasing fuel filter life. This system features: (1) an air bleed screw, (2) drain petcock, (3) metal case element, and (4) a dash-mounted electronic warning sensor.

To get comfort and economy many are turning to diesels

weather. Diesel fuel exhibits slightly different characteristics than gasoline. As a result of less refining, diesel fuel combines more heat energy and is more economical than gasoline, but it also has a paraffin content that promotes low temperature problems.

These low temperature problems involve the fuel flow properties of cloud point and pour point. The cloud point of a diesel fuel is the temperature at which the paraffinic components (waxes) of the fuel begin to precipitate, while the pour point is the temperature at which the fuel congeals. When the wax crystals precipitate, they collect on fuel filters and hinder the flow of fuel through the system. If the fuel temperature falls below its pour point, delivery of the diesel fuel to the engine may become practically impossible.

Two grades of diesel fuel are available. Number 1 is more highly refined and will better resist cold weather waxing, but it is more expensive and not always available. Number 2 diesel fuel is readily available. During the winter months, number 2 fuel is blended for cold weather to reduce waxing tendencies; however, the risk of paraffining still exists.

Thus, the diesel owner who exercises care in buying fuel will usually avoid many common plagues of winter driving. Manufacturers warn motorists not to treat winter diesel fuel with cold weather additives themselves. Simply stated, they are asked to "let the oil companies do their job." Additionally, the engine manufacturers warn that additives are ineffective and may damage fuel system components.

Another diesel plague is water. Even small amounts of water in diesel fuel can result in rapid wear and corrosion of fuel injection systems, reduced engine efficiency and costly repairs.

Diesel fuel, unlike gasoline, is a light oil that lubricates the interior surfaces of fuel injection systems, where close tolerances and precision-ground surfaces are critical to optimum engine performance. Water-contaminated diesel fuel strips the lubricant from pump surfaces and settles in the injector pump, where it causes rust to form.

As demand for diesel fuel has increased, its quality has decreased. Number 2 diesel fuel can contain as much as 10 percent water. Even highly refined fuel is often contaminated by poor handling and storage. As the number of diesel-powered vehicles increases, more service station owners are offering diesel fuel. Instead of installing new storage tanks, many operators are converting old gasoline storage tanks to diesel use. These rehabilitated tanks, because of their age, often allow water to seep into diesel fuel. Less-than-thorough cleaning jobs also contribute to diesel fuel contamination when rust and residue left in the tank after cleaning mix with fuel.

Some water is always present in diesel fuel. As air inside a fuel storage tank cools, moisture condenses and water mixes with diesel fuel, then sinks to the bottom of the fuel tank, where it remains until it is stirred up or pumped out.

In winter, water in diesel fuel can freeze, causing blockage of fuel flow, either in the fuel line or at the filter where small ice crystals are strained out of the fuel.

Again, the solution to the water problem is operator care in the selection of fuel dealers.

The impact of diesel engines can be significant on all transportation fronts. And nowhere will this impact be felt more than in the personal economy, comfort and safety offered by larger cars.

WARNING

Don't mix gasoline with your diesel fuel to offset winter starting and driving problems. Diesel fuel, unlike gasoline, doesn't vaporize rapidly and therefore the entire fuel containing system is different. Gasoline mixed in the diesel fuel will vaporize and fill air pockets in the tank. There have been several cases where this vapor has been ignited with explosive results.

cinder Elliot

A BALL? YER GOIN' TO A BALL? KIN I GO TOO, *M*A*W? KIN I? HUH? HUH? HUH?
YOU? Y'GOTTA BE OUTTA YER GOURD Y'LITTLE CREEP!
PLEASE, *M*A*W! I'M TIRED OF CLEANIN' THIS CRUMMY HOUSE!
I WANNA GET INNA CAR AN' GO TO THE BALL!
I SAID NO! BESIDES, YOU'VE GOT NO CLASSY T-SHIRTS TO WEAR LIKE ME AND YER STEPPERSONS!
LITTLE TWERP CAN'T READ NOTHIN' BUT T-SHIRTS!
Nurd
WHAT Speed Limit ?
YOU YIELD

*Mean*and*Wicked?

HUH?
I SAID: STOP! ... AND THIS HERE MAGIC WAND'LL FIX IT SO YOU CAN UNDERSTAND STUFF WITHOUT HAVIN' TO READ IT OFFA NO T-SHIRT!
SMACK
HEY, MAN, THAT'S COOL! BUT WHO IS YOU?
I'M POPPA WHEELY - YER HAIRY GRANDFATHER AND I'M A-GONNA FIX IT SO'S YOU KIN GO TO THE BALL! HERE - KISS THIS FROG 'N LET'S GET THE SHOW ON THE ROAD...
WHUT NEXT?
RIBBIT
RIBBIT
KISS!
POOF!

♪ AFTER the BALL WAS OVER ♪

NEXT MORNING

*M*A*W? THIS IS CLANCY. COME AND GET HIM, WILL YEZ? HIMSELF 'N HIS PUNKIN' 'N HIS FROG. I'M TOIRED OF TALKIN' TO HIM IN T-SHIRT...
I'VE GOTTA BOOK YOU KID, YOU'VE FLUNKED ALL THE SOBRIETY TESTS
MAY I SEE YER DRIVER'S LICENSE, PLEASE?
DRIVIN' UNDER THE INFLUENCE, HUH?
HOW MUCH BAIL, CLANCY?
WHAT DO YOU MEAN: "THAT'S JUST FOR STARTERS"?
KELLEHER

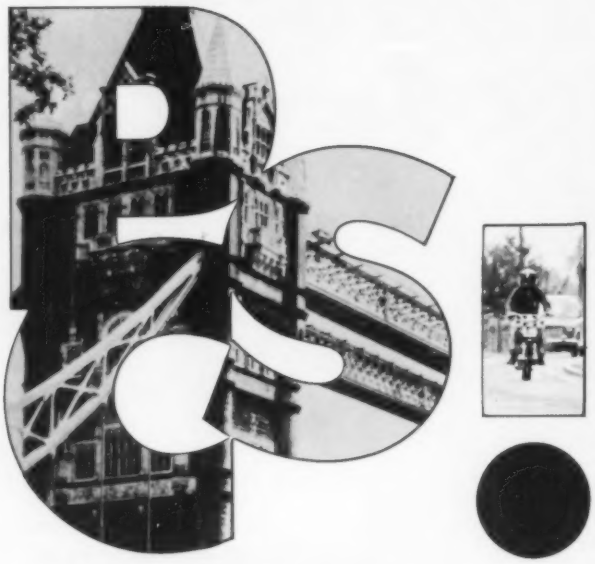
*MATURE
*AND
*WITH IT!!

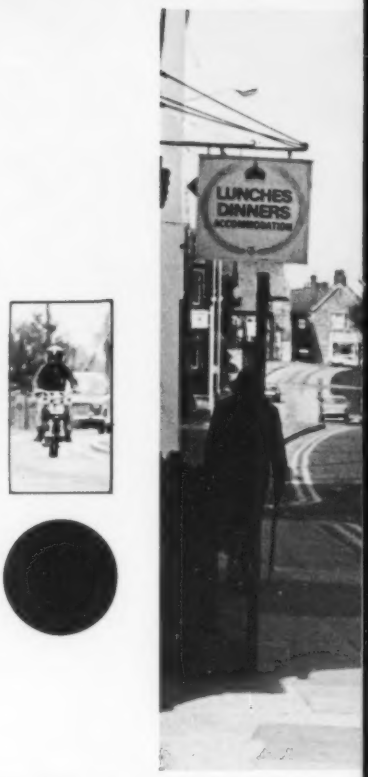
ERP!
EAD
IRTS
STOP STIRRIN' THE SOUP WIT' THE SCREWDRIVER, DUMMY!
WHAT'S A CENTER LINE FOR? IF NOT TO DRIVE TO THE LEFT OF?
ELD
Twit
"LOOK OUT HERE I COME!" LET'S PUT THE "IM" BACK IN "IMPROPER TURNS"
"I'LL SHOW YOU!" LET'S PUT the "IM" BACK IN "IMPROPER OVERTAKING"
"I DON'T BUCKLE UP"
"I CAN STOP in TIME" • WANTA BE GROSS? • FOLLOW TOO CLOSE!
HELMETS ? WHY WEAR 'EM ?
PUNKIN' PIE? GOL-LY *M*A*W, YOU'RE MEAN!
STOP THE MUSIC!
GET BACK TO YER POTS AND PANS! AND WHEN YER FINISHED, MAKE A PUNKIN' PIE OUTTA THAT PUNKIN'

Marijuana and* Whiskey?

THERE! NOW YOU'VE GOT A DATE, A NICE HAIRCUT AND SOME NEW THREADS— AND-D-D-(PRESTO!) A SET OF WHEELS!
GEE
RIBBIT
POPPA WHEELY, YOU IS THE MOST!
I KNOW. HAVE A BALL AT THE BALL, YOU TWO. BUT REMEMBER THIS, CINDER ELLIOT... DRIVE SAFE! IF YOU DON'T, YER BACK TO POTS AND PANS, PUNKIN' PIES, READIN' EVERYTHING OFFA T-SHIRTS AND ONE OF MY SELDOM-USED WHAMMIES!!
WHAT'S YER NAME, DOLL?
RIBBIT
SPEEDIN'! *!!6*!
! FAILIN' TO YIELD!
! DRIVIN' TO THE LEFT OF THE CENTER LINE!
! IMPROPER TURNS!
! IMPROPER OVERTAKING!
! TAILGATIN'! ! Y' DINT BUCKLE UP!
! AND WHEN YOU WUZ RIDIN' THAT MOTORSICKLE, ALL YOU HAD ON YER HEAD WUZ A DERBY!
YOU BELIEVED WHAT YOU READ ON YER STEP-PERSON'S T-SHIRTS
YOU KNOW WE'RE ALL SAFE DRIVERS! ...WE WROTE THE BOOK!
SAFE DRIVERS by *M*A*W and the STEPPERSONS
SAFE AWARD
THANK YOU, *M*A*W, FOR INVENTING SAFE Otto M. BEALE
1ST O PRIZE for SAFE
THAT WUZ A COSTUME BALL WE WENT TO LAST NIGHT! YOU KNOW: "JUST PRETEND"
DON'T JUST STAND THERE, SAY SOMETHING!
RIBBIT
WEEL-L-L... AT LEAST I KNOW WHAT A "SELDOM-USED WHAMMY" IS...

More to it than driving on the left





England?!?!

by TSgt MICHAEL D. HAWKINSON
RAF Croughton, U.K.

"Hey, Bob! I got my orders today — England."

"What a shame; now you've got to get rid of your new bike, Jim."

"Why? They've paved the roads over there by now . . . haven't they?"

"Yeah, but remember, the country is backwards; they drive on the wrong side of the road. Your throttle is on the wrong side and so are your brakes, clutch, gears . . . your bike won't meet local laws."

You may have heard such a conversation at one time or another. But how many of Bob's statements are true? He is correct when he says that the English drive on the "wrong" (left) side of the road, but that's about the only factual statement Bob made to his friend.

So, how many modifications do you need to make to your machine in order to drive legally in England? One! That's right, with the exception of changing your headlight (so that it will dip in low beam to the left), your stateside brake is mechanically identical to motorcycles on the English roads; you've got an English bike. More changes do need to be made, true, but not to your motorcycle — to your driving attitude.

Driving on the left side of the road is different for anyone coming from the states. It'll take some practice and patience to become accustomed to this change and it is a good idea to be in the country for awhile, driving or riding in a four wheeler, before putting your bike on the road. This difference will become habit rather quickly but concentration early on is the key to safe driving.

Your bike does have to be a safe vehicle when on English roads. Within a year of your arrival (and if your bike is over three years old), you must obtain an MOT (Ministry of Transportation) Certificate. This is an English requirement that is in addition to any military requirements. This certificate is issued only after a very thorough inspection of your vehicle's structure and mechanical soundness, and the bike has been determined safe for riding. A heavy

The Iron Horseman Motorcycle Club returning from Silverstone Racetrack, Brackley, Oxfordshire.

fine if caught without the certificate, in addition to the police impounding the vehicle if it is found unsafe, makes the MOT Certificate an absolute necessity. Not only mandatory, this requirement could save a biker's life by identifying deficiencies on a vehicle that the owner could quite easily overlook.

As you can probably guess, the British are quite safety conscious. Their laws, which are enforced, require the motorcycle operator to wear a helmet *and* eye protection (if not already a part of the helmet). Also, helmets must meet British Safety Standards which are in most cases more stringent than Snell Certification, DOT Standards or Z90.1 requirements. Before you drive in the country with your American made/bought helmet, it is worth your time to contact the manufacturer of your helmet to ensure it is legal under English laws — don't take the word of a local retailer. Contact the manufacturer; he has the information and will let you know if there is a problem with his helmets.

Driving on the English roads, putting aside driving on the wrong side, is an experience. The highways you'll be driving range anywhere from the superhighways (Motorways) eight lanes wide, to the single lane, country roads and you'll probably have occasion to drive on every type of road in between those two. The biker is faced with the same obstacles on English roads as would appear on stateside highways plus a few extras. One phenomenon, usually well-marked, that a driver could come across but that is not found in the U.S., is the reverse camber. A reverse camber is literally a construction error on a curve that can pull a vehicle off the road. The tilt of such a curve is away from the center, so the centrigufal force placed on your vehicle can pull you towards the shoulder. It is a very noticeable hazard, and entering a reverse camber at too great a speed can give you quite an unexpected thrill.

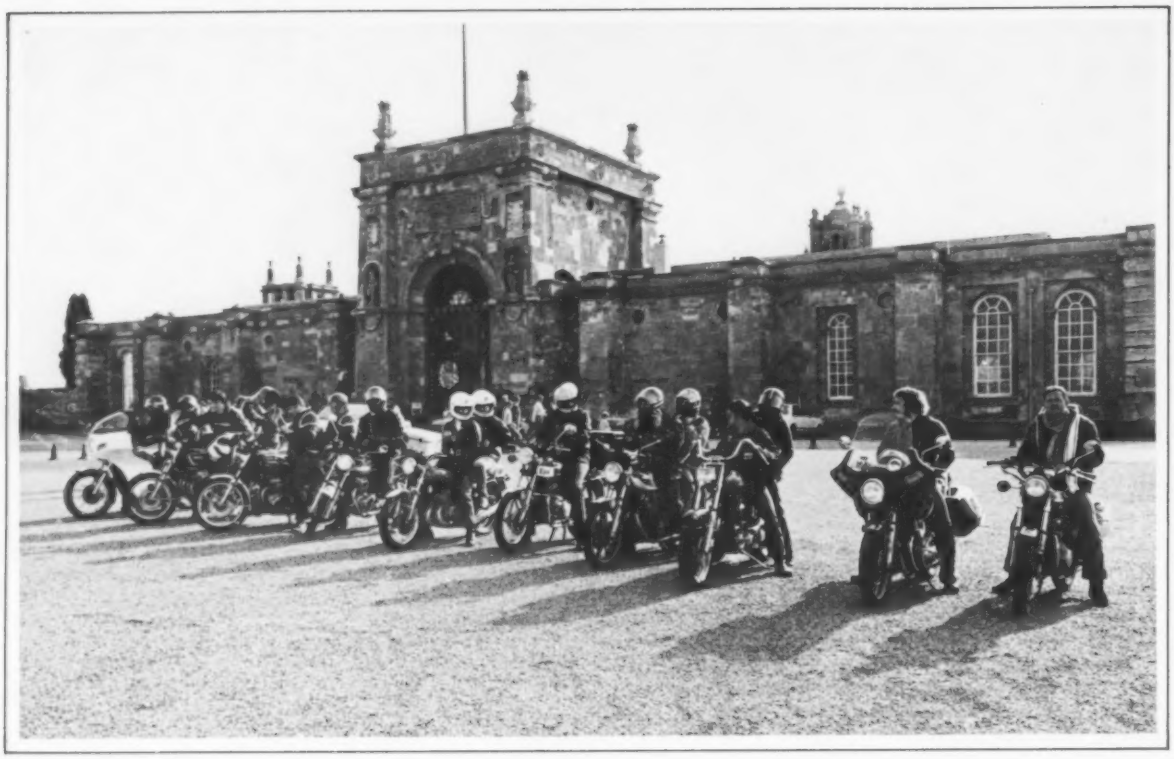
Road surfaces vary greatly; you'll find the smooth concrete surface on the motorways similar to stateside interstate conditions, and the rough farm roads similar only to the most rural roads in the states. Since much of your driving will be on these rural roads, you'll find the abundance of sharp curves, potholes and disappearing lanes quite a challenge to even the most skilled biker, and a very hazardous situation for any novice.

To add to these complications, let's talk about the weather. If you happen to catch a British show on TV, you're likely to see sunny skies across green fields, a few clouds may be in the sky, but nothing threatening — generally a beautiful biking atmosphere. Don't be fooled. After biking in England for three years, I have seen a few days that fit this picture but they are the rare occasion indeed. What you will find is fog, rain, snow, sleet, hail, ice, slush, and just about any other poor weather driving condition that comes to mind.

Since we can't change the weather, bikers must be prepared to drive in these adverse conditions. Rainsuits are a must; heavy, gauntlet gloves (lined) are absolutely necessary.

continued

continued



(above)
The Club visiting the home of the 9th Duke of Marlboro, Oxford.

(below)
One of the busiest roads leading to RAF Upper Heyford, Oxfordshire.

Boots, besides being a safer footwear, will keep you warmer and drier than shoes. Heavy clothing is a requirement for biker survival in England year round. Stop and think: on a normal spring or fall day, the temperature stays at about 30° F; on a bike, at a slow 45 mph, you're feeling a -6° F. At 20° F, 60 mph (the legal speed limit in England except for motorway driving), the temperature on your bike is a very cool -23° F. Even summer temperatures of 60° F will make riding uncomfortable since the chill factor is around 40° F, not exactly cut-off shorts and T-shirt weather. The point is, stay warm and stay alive; you can't concentrate on the road when you're attempting to stay warm on your bike. Think about investing in a snowmobile suit and a fairing for your bike before arriving in England. Both items are much cheaper in the U.S., and will give you a definite advantage against the weather.

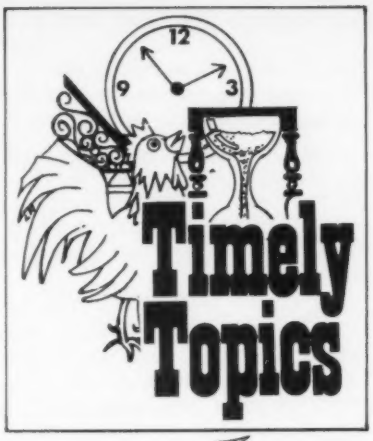
Well, I've given you plenty of information on the negative side of driving in England. Few if any of you true bikers are totally turned off and that's good. My intention is to make you aware of what's ahead, not scare you off.

As I'm sure you know, there are some advantages to riding a bike in England. As with most of Europe, England has built more vehicles than

parking places. On a bike, you can safely park wherever you go, be it London or the small country villages that are so numerous. One of the great things about riding a bike anywhere is the ability to get around cheaply. This is no less true for England; with gas costing more than $3 a gallon, this alone outweighs most negative facts mentioned if you like to tour, and there are plenty of places to tour in this country. There is no place in England that is a great distance from historical sites, castles, ancient monuments, very old cities, museums, etc., nor will you ever be far from a coast line.

If touring isn't your "cup of tea," the Silverstone Circuit will appeal to racing enthusiasts, both four and two wheel race fans. Located near the city of Northampton, Silverstone is very nearly in the geographical center of England, relatively easy riding distance from any place in the country. In addition, the British are bike enthusiasts themselves, so there are many big bike shows around the country every year. When you've had your fill of old buildings and fast vehicles, there is always the continent to explore. The ferries between England and Continental Europe are both numerous and inexpensive for bikes, and well worth the trip, be it for a day, week or longer.

Now you have the story. Bikes do exist in England; as a matter of fact, they flourish. If you decide to bike in this country, contact any base safety office in England for local information. Many of the military bases in England have motorcycle clubs that are well established and work closely with safety personnel. These clubs generally have members that are British natives and military personnel, so information about touring, local laws, and military requirements are readily available. Bikes belonging to members range from 100cc to the big Harleys, so you can see that every biker is welcome. If you're coming to England, drop a line to the Iron Horseman Motorcycle Club, c/o 20TFW/SEG, APO New York 09194. The Club will be happy to answer questions you might have on motorcycling in "Merry Ol' England."



FREE COURTESY MARINE EXAMINATION

Is your boat up on the trailer, ready to head for the launch ramp? Before you hit the highway better double check. Is it really ready? Be on the safe side. Contact the U.S. Coast Guard Auxiliary for a Courtesy Marine Examination (CME). It's FREE. At your request, a specially qualified Auxiliarist will check the safety-related equipment on your boat — fire extinguishers, personal flotation devices, navigational lights, visual distress signals, anchors, ventilation, fuel tank, and much more. Easiest of all, you can have a CME of your boat while it's sitting right there on the trailer. A CME is like a one-to-one boating lesson. The Courtesy Examiner can give you sound advice on many aspects of safe boating, including trailering tips.

If your boat meets all the federal safety equipment requirements, requirements of the state in which it is examined, and some valuable additional Auxiliary requirements, it is given the Auxiliary "Seal of Safety" decal. The decal is respected by boating authorities throughout the country. If the boat fails the examination no law enforcement agency is informed. You are the only one to know, so that you can take steps to come into legal compliance. If there is no CME station at your marina, check with the local Coast Guard or Coast Guard Auxiliary unit to contact an Auxiliary Courtesy Examiner. A CME can make a safer driver of you on the roadway and on the waterway.

MOTORCYCLE HELMET LAW UPHELD

Germany's year-and-a-half-old law requiring motorcyclists to wear helmets is not unconstitutional. This ruling came from the Federal Constitutional Court in Karlsruhe, the country's highest court. A group of motorcyclists — some of whom faced fines for not wearing their helmets — claimed the state had no right to make them do something even though it appeared to be in their best interests. The court ruled that driving without a helmet — unlike, for example, a dangerous sport such as rockclimbing — takes place in public areas where the state has a special responsibility. Since a severe head injury to a cyclist would place a burden on the community at large, the court said, the state has the right to impose a simple, "easily tolerated" measure to reduce the risk of such an injury.

Meanwhile, figures from the Ministry of Transportation show the 1980 helmet law is working well: 99 percent of motorcyclists are now reported to be wearing their helmets. Announcing these figures in Bonn recently, Transportation Minister Volker Hauff claimed the results of the helmet law boded well for the seatbelt fine — DM 20 for non-bucklers-up — to be introduced this summer.

("The Week in Germany")

AUTOMATIC SLIPS; JURY SAYS FORD MUST PAY $250,000

A jury has found Ford Motor Co. at fault for the injury to a 75-year-old man that resulted when his 1973 Ford van allegedly slipped from Park to Reverse and ran over him.

The jury awarded the plaintiff $250,000 in damages.

The alleged Park to Reverse slippage accident is one of a number of such occurrences reported since the NHTSA reached an agreement with Ford late in 1980 whereby the company agreed to send dashboard warning notices to more than 10 million owners of Ford vehicles equipped with automatic transmissions in exchange for the government's agreement to forego a recall of the vehicles.

Ford has maintained throughout that no defect exists in its automatic transmissions and that the thousands of accidents and 154 fatalities attributed to alleged Park to Reverse slippage are the result of "operator error."

(Automotive News)

Make BOTH Ends MEET

CONTRADICTION

An introduction is to introduce people, but Fuel M.P.G. Economy, who has already been introduced to you, is now trying to find real meaning in his life. So this is the opposite.

For those of you who may have forgotten who Fuel M.P.G. Economy is, here's a little help:

"Nobody at DRIVER writes about me," said Fuel. "Nobody keeps the readers informed. I make it 27 issues come December since anybody wrote about me."

"It certainly isn't 27 issues —" said I.

"Come December," explained Fuel.

"And this issue is June," said Jeri. "So that would make it 21 issues. And I mentioned you myself a year ago."

"Not in any detail," said Fuel. "Not first this is 'Fuel Economy' and then how to get it. You said 'MPG' and flashed past. You continued to pound out speeding text as I was meditating my reply. I *had* thought of saying 'What?' — but, of course, it was then too late."

"Well, I was in a hurry," said Jeri.

"No Give and Take" Fuel went on. "No exchange of ideas: 'MPG'— what — I mean, it gets you nowhere, particularly if only the safety story is printed for the second half of the article."

"It's your fault, Fuel. You've never been into safety. You must stay here at the corner gas station waiting for the readers to come to *you*. Why don't you go to *them* sometimes?"

Fuel was silent for a little while, thinking.

"There may be something in what you say," Fuel said at last. "I must move about more. I must come and go. When people have confidence in MPG then they can be in top mental and emotional shape to drive safely."

"That's right, Fuel. Drop in on any of our stories at any time, when you feel like it."

"Thank-you. And if an editor says in a Loud Voice, 'Bother, it's MPG,' I can drop out again."

CHAPTER ONE

WE MEET FUEL
(and wonder why)

"How-do-you-do," said I to Fuel.

"I don't," said Fuel. "Don't notice."

"What's the matter, Fuel?"

"It's air conditioning," said Fuel gloomily. "Still."

"It is?"

"Or is it windows down?"

"You tell me."

"Yes," said Fuel. "However," he said brightening up a little, "there's no conclusive proof."

"What's the matter, Fuel?"

"Nothing. Nothing important. It's just driving at highway speeds on a warm day. We used to 'know' we could save fuel by using the air conditioner instead of opening the side windows."

"We did?"

"I did. At least I thought I did. But I suppose I don't. After all, it just may be a fuel-wasting myth.

"The really exciting part," said Fuel in his most melancholy voice, "is the observations made by Glenn

Opening the side window doesn't add to the car's aerodynamic drag as much as the air conditioner compressor absorbs engine horsepower. This new continuous cable window regulator also helps because its thin profile makes it ideal for lightweight car doors.

F. Roberts and Axel B. Rose of the Oak Ridge National Laboratory.

"They used two vehicles — one compact and one subcompact. They made a total of eighty 55-mph test runs in each car. The air conditioner effect was significant for both cars. It imposed a 1.0 to 1.6 mph penalty for the compact. And a 0.7 to 1.0 mpg penalty for the subcompact.

"On the other hand, the effect of lowering the windows was found to be statistically insignificant."

"So what?" I asked.

"So," Fuel scowled. "Given their findings, those of us who depend on air conditioning should face the truth."

"The truth?"

"Yes," Fuel faltered. "Yes: we must admit that our real motive might be to increase our comfort, not our gas mileage.

"But, after all, what is Fuel Economy?" he said. "Here today and gone tomorrow. Help yourself."

CHAPTER TWO

FUEL GETS INTO SIX SPEEDS
(making the shifts)

Fuel continued, "I've been told — the news has worked through to my corner — the damp bit down on the right which nobody wants — that long-legged gearing stretches mpg."

"Fuel," said I, "tests show that extra long-legged gearing can return about 25 percent more mpg."

"Very interesting," said Fuel. "I suppose they'll be sending me down the odd bits which got trodden on. Lighter vehicles and more efficient engines. Not at all, don't mention it."

"They've already got about all they can get out of those, Fuel."

"What's that like?"

"It means that it is very difficult to get more than 10 percent improvement."

"I hear that. Who dropped the ball?"

"It isn't like that. However, better matching of engines and transmissions could bring 25 percent over current cars."

Fuel shook his head slowly.

"Are you talking about the R.H. Thring of Ricardo Consulting Engineers, Ltd., report to the Society of Automotive Engineers?"

"Yes," said I.

"The one where he equipped a four-speed compact car with two overdrive units? Where the car could travel from 18 to 35 mph at an engine speed of 1,000 rpm in high gear?"

"Yes, yes!" said I, getting quite fussy. "The test where Thring found gearing of 28.2 mph per 1000 rpm delivered the best economy. Where improvements of 11, 17 and 24 percent were measured at speeds of 30, 40 and 50 mph, respectively."

"Are you sure?"

"Of course I'm sure. Thring claims that electronic control of the engine and transmission system could lead to even greater improvements."

"Greater improvements?"

"Greater improvements," said I sulkily.

CHAPTER THREE

FUEL GOES FOR A MICROPROCESSOR
(saying it's not his fault)

"Ah!" said Fuel. "A mistake, no doubt, but still the weakness of both manual and automatic transmissions is their poor match."

"How's that?"

"Don't blame me," said Fuel. "But what the driver wants doesn't always match how the engine must be controlled to run efficiently."

"Why?"

"Because the internal combustion engine is very inefficient when delivering less than its full power for any engine speed."

"I thought . . ." said I.

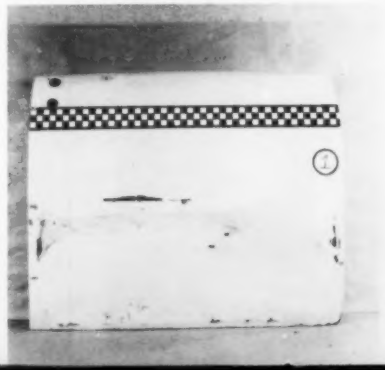
"You know what I told *you* about thinking," Fuel interrupted.

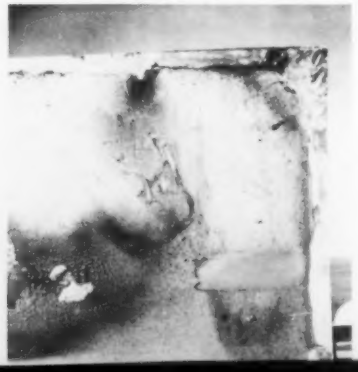
I looked at him crossed-eyed.

Fuel stuck his tongue out at me and continued. "Let a microprocessor control overdrive selection in *all* forward gears. This way the transmission effectively has twice as many useful gears. The engine is able to operate at slower, more efficient speeds when the microprocessor decides that overdrive would be desirable."

continued

Making a car body from plastic has a number of advantages. It means no rust and yields substantial weight savings. The General Electric TRX is 110 pounds lighter than if the body had not been made from GE plastic.





Aluminum's built-in corrosion resistance is becoming increasingly important as Detroit automakers include antiperforation warranties and owners keep their cars longer. This aluminum outer door tested in a Checker Car on the streets of Chicago reveals no signs of corrosion on the front or back (photo on right).

continued

Professor David Ullman credits the survival in a field near Glenville, NY, of this 68-year-old 1914 Detroit Electric to its all-aluminum body which protected the interior.

"Sez who?" I argued.

"According to tests by Brian M. Forster of Laycock Engineering Ltd."

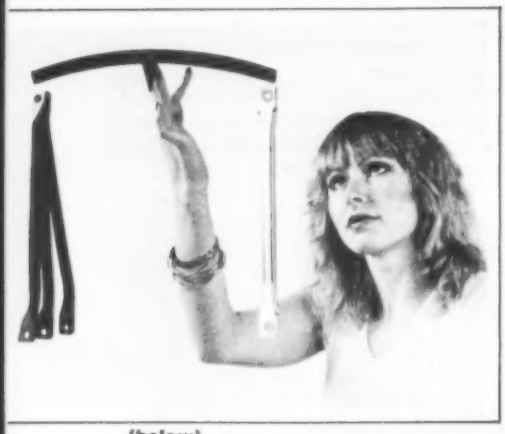
"Oh, yeah!"

"Yeah! All current fuel saving devices connected with the transmission are aimed at fuel savings under highway conditions only. And they are totally dependent upon driver selection. Without any driver effort, Forster's test showed a five percent increase on the EPA urban driving cycle, where conventional overdrives tend to have no effect. There's also a 10 percent jump on the EPA highway cycle."

"I'd sooner do my own shifting," said I.

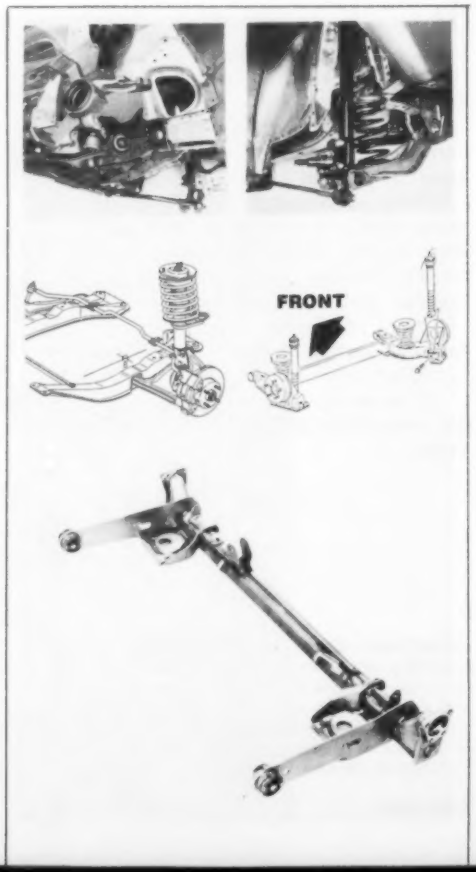
"Well," shrugged Fuel, "you're going to have to pay for it."

Die cast aluminum wheels, produced by Kelsey-Hayes Company using the patented Pore-Free process, meet rigid performance requirements, yet are 36 percent lighter than wheels made by the permanent mold casting method.



(left)
Lucas' advanced Nitrocarburizing process demonstrates a two-thirds weight saving achievement in new windshield wiper linkage construction.

(right)
Moving all the drive components forward of the passengers in many new models has freed engineers to pursue a variety of suspension designs — both front and rear. A variety of carbon and high-strength sheet and bar steels are used to reduce unsprung weight, and increase durability and performance dependability.



(below)
Under the paint and under the chrome, approximately 60 percent of your car is steel. The American Iron and Steel Institute stressed all-steel auto bodies for strength, style and safety at the 1982 SAE Exposition in Detroit.

CHAPTER FOUR

FUEL TALKS ELECTRICITY (peaks and valleys)

Fuel coughed in an important way, and began: "Whatnots and Et-ceteras, before I begin, or perhaps I should say, before I end, I have —"

"What's Fuel talking about?" Cliff whispered.

"I don't know," said I rather dolefully.

"Friends," Fuel said. "Including oddments, electric vehicles may be charged immediately upon their return home, or later at night. They then can increase existing peaks in electricity demand or fill in nighttime valleys when demand is low. However, according to J. Mader of the Electric Power Research Institute and Stephen J. Kiselewich and William F. Hamilton of General Research Corporation, electric vehicles will ordinarily be charged at night, since this will tend to be most convenient and least expensive for their owners. If electric vehicles come into general use, additional facilities for daytime charging will appear. Though, even with wide use, daytime recharging would require power levels far below those for nighttime recharging."

"I thought electric vehicles would have more impact," said Ginny.

"So did I," said I.

"AS-I-WAS-SAYING," said Fuel loudly and sternly, "as I was saying when I was interrupted by various Loud Sounds, Robert F. Giese, Margaret K. Singh and Martin J. Bernard of the Argonne National Laboratory note that maximum electricity consumption for vehicles is projected to be less than three percent of total U.S. electricity demand in the year 2000. These remarks, of course, don't apply to certain areas — such as New York and New Jersey — where electricity consumption by vehicles could represent a sizable fraction of total demand."

Major Late and Major Early, two officer-quasi-friends of Fuel, said, "Well, Early?" and "Well, Late?" to each other in such a hopeless sort of way that it really didn't seem any good waiting for the answer.

CHAPTER FIVE

FUEL LOOKS AT WEIGHT LOSS (almost)

"Good morning, Fuel," said I. "Good morning," said Fuel gloomily. "If it *is* a good morning," he said. "Which I doubt," said he.

"Why, what's the matter?"

"Nothing. Nothing. We can't all, and some of us don't. That's all there is to it."

"Can't all *what?*" said I, scratching my nose.

"Save energy. Save weight *and* energy. The average 1982 U.S. auto contains 133 pounds of aluminum. That's four percent of its total 3282-pound weight. Estimates made by consultant Arthur Anderson forecast the average 2250-pound 1990 model car will use 200 pounds, or nine percent, aluminum. Each pound of aluminum substituted for steel can cut car weight 2.25 pounds when secondary savings are included."

"Oh!" said I. I thought for a long time, and then asked, "Doesn't that increase fuel economy substantially?"

"Sure," went on Fuel gloomily. "Harlan Gilmore, chairman of the Aluminum Association Automobile and Truck Committee, believes an aluminum intensive car could increase mpg by almost 50 percent in a car already reaching 25 mpg," he explained. "I'm not complaining, but There It Is."

I sat down, and tried to think this out. It sounded to me like a riddle, and I was never much good at riddles, being a seven-level of very little brain.

Fuel was becoming impatient with me.

"I'm thinking," said I.

"Some can," said Fuel.

(EXPLETIVE DELETED)

"You seem so sad, Fuel," I remarked.

"Sad? Why should I be sad? All those new domestic applications, including the aluminum radiator, engine block, cylinder head, prop shaft supports and formed sheet bumper."

"But you —," I tried to question.

"But wait until you see what the steel people have to say," Fuel said.

CHAPTER SIX

FUEL LOOKS AT PHANTOM ENERGY SAVINGS (and we say "good-bye")

I looked — first to the right and then to the left.

"Steel people?" said I.

"Can't you see them?"

"No," said I. I scratched my head, being a little puzzled by all this.

"It's bad enough," Fuel said almost breaking down, "but according to a study by the research firm of Arthur D. Little, Inc., concentration on the mpg attained by lightweight cars to the exclusion of other energy use factors can undermine national conservation efforts."

"It does?"

"Although they reduce vehicle weight and improve mpg, several materials with their high-energy content significantly increase total energy consumption."

"But where's the real energy savings?"

"Well, overlooking those factors, the demand for mpg improvements may force increasing dependence on energy-intensive materials that provide 'phantom' energy savings. Moreover, continuing an exclusive focus on mpg could mask a growing drain on natural energy resources in the years ahead."

"What are you talking about, Fuel?"

"Life cycle energy requirements," he said. "Some materials require substantially more energy to produce than can be saved in nine years — or more — of driving."

"Oh, I see," said I, not seeing. "But where are the steel people?"

"The research was funded by the American Iron and Steel Institute as an effort to cast new light on the hidden side of the energy issue and to expand the search for practical solutions," Fuel said.

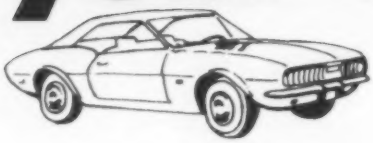
This was too much for I. "Stay there!" I called to Fuel, as I turned and hurried back to my office as quick as my short little legs would carry me.

"I just wondered . . . about mpg," Fuel said to himself sadly. "I wonder about it a lot — being my middle name and all.

"MPG, my favorite subject, well, well, well."

By TSgt. RON LATHROP, Technical Editor

do it your Safe Way



There's a right and wrong way to do just about everything including your own car repairs. Without getting into jokes about doing things the wrong way or my way versus the right way and your way, let's just say that every job can be done the safe way — and should.

Here are a few tips that should make every job you tackle as a backyard mechanic safe.

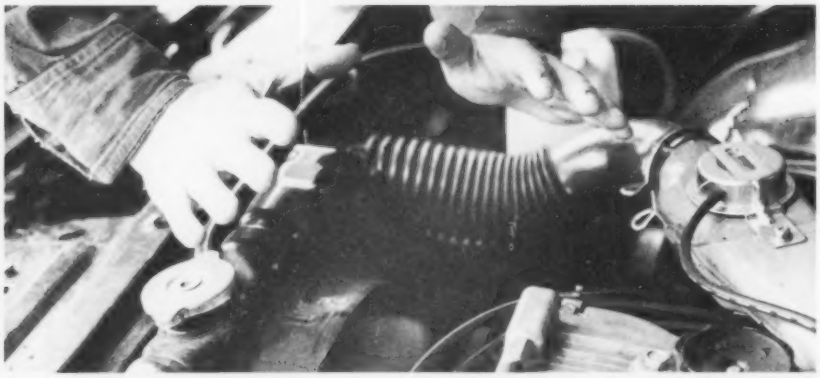
Don't wear rings, watches, bracelets or any jewelry when working on your vehicle. Also avoid wearing neckties or loose clothing, and tie up your hair if it is long.

(above)
Wearing coveralls will protect your clothing and body from dirt and grease.

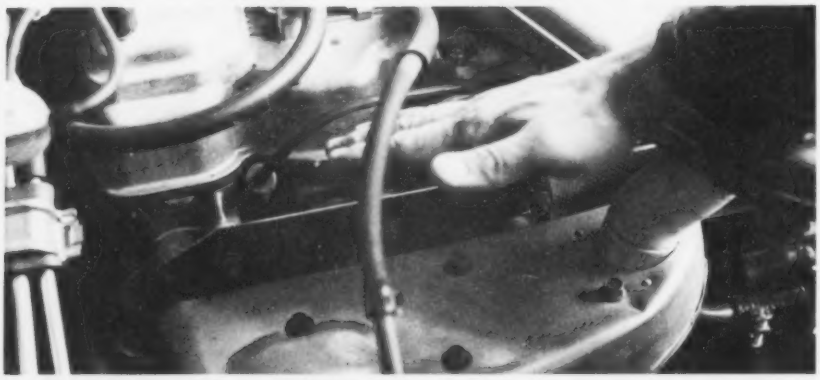
(above right)
Any time you're working on a vehicle, read the instructions that came from the manufacturers for everything you're using, as well as the service or shop manual covering the job at hand.

(right)
Chock the wheels. Set the parking brake. Put the transmission in neutral or, on automatic transmissions, park.

Always operate the vehicle in a well-ventilated area to avoid carbon monoxide asphyxiation. If the area can't be ventilated, route the exhaust outside via a leak-proof exhaust hose.



Keep hands, hair, loose clothes and test leads well away from blades, belts and other moving engine parts.



Don't touch hot exhaust manifolds, radiators, or high-voltage spark plug and coil terminals.

Never look into a carburetor throat while the engine is being cranked or running. Sudden backfires cause burns.

continued

Don't smoke or allow flame or spark to occur near carburetor, fuel line, fuel filter, fuel pump, spilled gasoline, cleaning solvents and other flammables. Also, never smoke or use a torch near a charging battery.

Be especially cautious of using anything electrical within 18 inches of the floor, to avoid igniting gasoline vapors.

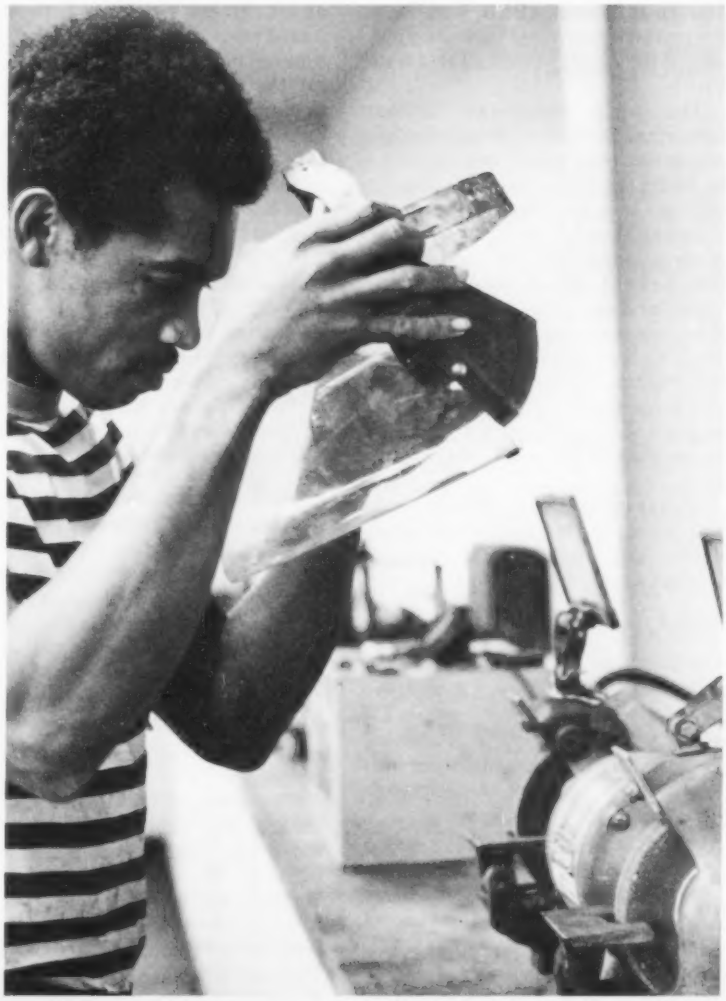
Never use gasoline as a cleaning solvent.

(right)
Keep a fire extinguisher rated for gasoline and electrical fires handy.

Use the proper tool of the proper size for every job. Never use worn tools.

Think "what is going to happen" should your hand slip when working with a tight bolt or nut.

Keep your work area clean and uncluttered.



Wear safety goggles when drilling, grinding or using a chisel.

BACKFIRE

LETTERS to the EDITOR

HELMET USE IN THE UK

It was with interest that I read your article on helmets in the December 1981 issue of DRIVER. A peculiar anomaly in the use of helmets has come to light here in the United Kingdom.

British law requires that all helmets worn in the UK meet the safety standards established by the British Standards Institute (BSI). Visitors to the country may wear their own helmets if they meet or exceed BSI standards.

The only American helmet authorized for sale by British dealers which has been tested and approved by BSI is the Bell series. This came to light as I was querying BSI about the Simpson Model 47 helmet which one of my personnel has. BSI told me that this helmet failed to meet their "deceleratory rotational" test and therefore is not legal for street use in the UK. I was also told that the British Police were prosecuting one driver for the wearing of this helmet and that the legality of its wear would be decided by the result of the court case.

This is interesting in that the Simpson meets or exceeds Snell standards. You might like to let your readers know about this.

SMSgt Neville S. Summercorn, USAF
APO New York 09241

Like "we" always say, "Check the local laws." Or as "they" say on TV and in ads, "Void where prohibited by law." Seriously, thanks for this information. Also, see story on page 16.

RID OF THE PING

I have just finished reading your March 1982 issue of DRIVER and enjoyed every page. The article that really caught my eye was the "Backyard Mechanic."

I own a 1973 Pinto and have been the only owner since it was new. Two years ago the engine developed a ping. But strange as it may seem, the ping would present itself only during the summer months. During the winter there would be little or no pinging at all. Every time the little devil would arise, I naturally thought it was tune-up time. After few times adjusting the timing and the carburetor I became thoroughly disgusted and came to the conclusion that the octane of the gas was not high enough.

Your article stated to check the heat flap in the air cleaner snorkel. As soon as I read this, I went out to the car and looked it over and sure enough with the engine warm the flap was closed allowing hot air to enter the engine. I replaced the flap and the ping disappeared. To my surprise even the engine run-on has stopped.

Thank you for all the great information in your well-written articles. Keep up the good work.

TSgt George Gill, USAF
McGuire AFB, NJ 08641

TURN SIGNALS, SEATBELTS AND STORING A VEHICLE

I enjoy reading DRIVER Magazine and look forward to seeing a new issue in the reading file. Just a few comments . . .

Concerning CW03 Gronborg's letter and your reply about the illuminated turn signals when the headlights are on, translated into simpler English, the parking light (not the brighter turn signal light) is illuminated when the headlights are on so you can tell when you're being approached by a car with one headlight burned out instead of a motorcycle. Notice that the parking light is practically invisible when the headlight is working. I thought that was a good idea the first time I saw it years ago.

I somewhat agree with SP4 Caldwell's feelings about the discomfort of seatbelts. It's not the lap belts that are uncomfortable, it's the poorly designed shoulder harness of years ago (like the ones on my '73 Dodge Coronet). But that's not an inherent fault of shoulder harnesses. I had a '69 NSU in Germany until 1971 and I used the three-point belt/harness faithfully. I had two minor mishaps in Frankfurt at slow speed but am certain that use of the belting system prevented a collapsed steering column and injured chest as well as a cracked windshield and skull to match. But I do strongly resent being *forced* to use them. My reasons are political and not safety oriented, so enough said.

The article on storing a vehicle was especially timely since it looks like I'll be putting my cherry '63 Buick LeSabre "up on blocks" early next year for an overseas long tour.

Keep up the good work!

MSgt John G. Penhallegon, USAF
Minot AFB, ND 58704

SEATBELTS SAVE AGAIN

This letter is in response to the article, "Rollover Accidents, Jeep CJ-5," appearing in the December 1981 DRIVER.

I have a personal experience which illustrates the utility of seatbelts. On Dec. 9, 1980, four Air Force officer trainees were driving along a divided four-lane street in San Antonio, Texas. Traffic was heavy and the owner of the Jeep CJ-5 kept his speed down to 30 mph. A recreational vehi-

cle approaching from the opposite direction crossed the median, bounced off the car in front and hit the left front corner of the Jeep. Markings on the street gave evidence of five complete rollovers. Witnesses claimed to have counted up to 10 rollovers. The driver sustained two broken bones in his foot. The two passengers on the right of the vehicle scraped their right arms. As for myself, sitting in the left rear, I had some bruising from the seatbelt. Needless to say, we were all tightly belted in the vehicle. I hope this experience illustrates to all you Jeep drivers the need to wear those belts. Were it not for the seatbelts we four would be highway fatality statistics today.

2Lt James M. McCall, USAF
Griffiss AFB, NY 13441

REAR BRAKE CLUNK

I'd like to thank DRIVER Magazine for saving me $90 in auto repair costs! In December I had brake problems in my 1980 Buick Skylark. This design problem is usually self-correcting with use. If not, the remedy is to remove the drum and turn the surface resulting in a $90 bill.

I wrote the company on Feb. 2 1982 asking for reimbursement for other repair work done. The next day I saw a January 1982 copy of DRIVER with Part Four of "What's that Noise?" The article concentrated on sounds unique to General Motors vehicles. The item explaining the rear brake clunk on 1980 Skylarks outlined the brake problem and solution my car had exactly.

When I talked with the Buick Zone Representative about my letter, I told him about the DRIVER article. Among other things, he agreed the company should pay the $90 cost for the brake repair — and did!

Keep up the great work!

Maj Richard A. Lenz, USAF
Wright-Patterson AFB, OH 45433

You are welcome. We're glad we were of help to you.

TRUCKS TO THE RIGHT LANE

This letter concerns a statement made in "Bits and Pieces II: The Annoyance Continues" (February 1982 DRIVER).

On page 6 you show four pictures of a tractor-trailer rig passing a VW micro bus. As part of the statement under these pictures you state: "Always expect a truck to move into the right lane, since this is where they seem to like to travel."

As a truck driver for many years I can assure you this is *NOT* the case. Due to the on/off ramps, constantly changing speeds, broken-down vehicles on the side of the road, etc., this is the most dangerous traffic lane on the highway. Almost all truck drivers would rather be in a safer lane (one lane to the left would be fine).

So you ask," "Why do trucks stay in that hazardous lane?" The answer is simple: Because the law requires trucks to travel in the far right-hand lane, except when passing slower traffic or when required to move left at interchanges, after which they must move to the right lane as soon as possible. This is not only the law in California but in the majority of states. While an automobile driver can use any lane available on the highway, a truck driver must, by law, stay in the most hazardous lane of traffic (the extreme right lane).

Also remember after being passed by a truck, the truck driver must move to the right as soon as possible and he can't look over his shoulder to see if he is clear. All he can do is look into a 6-inch-wide, 18-inch-high mirror. A car, another truck, or anything within that 65-foot-long blind spot can be very, very deceiving. So give a truck all the room and respect it deserves. In an accident with a 65-foot, 80,000-pound rig you can only come out a loser.

SSgt Richard G. Moore, USAF
Lubbock, TX 79410

SAFEST WAY

Reference the article entitled "Con-Spic-YOU-Us Controversy" by CMSgt David P. Cushing in the March 1982 issue of DRIVER.

Excellent, informative article. I question only one comment, and I quote: "Tests also showed that an ordinary motorcycle is usually most conspicuous in the center of the right lane, rather than in the left or right portion of that lane." Visibility-wise maybe, stability wise that is the worst place a biker can ride. Professional motorcyclists stress one place not to ride — the center of a lane. Stability in this area, due to oil, grease, and gas drippings, is greatly reduced. I suggest you rephrase that paragraph and inform the reader of the next best place to ride — that being, in my opinion, the right portion of the right lane.

By the way, I do ride also.

SSgt Warren L. Baynard, USAF
Peterson AFB, CO 80914

Sorry, Warren, but you are the victim of an old "Wives Tale" just like front brakes throwing you over the handle-bars. The only time oil, grease and gas droppings in the center of the lane cause stability problems is within 100 feet of an intersection. Ride to be seen.

☆U.S. GOVERNMENT PRINTING OFFICE: 1982 583—021/1007

School's OUT

Young people usually have good eyesight, fast reactions and agility, but those abilities often are offset by lack of experience and poor judgment — especially when matched against the speed and hitting power of a car. As a result, about 20 percent of all pedestrians killed are in the under-14 age group — school children, who at this time of year aren't in school. Playing in the street, running from between parked cars, dashing across streets without looking, chasing someone or pursuing pets, balls or other objects — those are some of the actions of children that you as a driver must watch for and defend against.